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PAPER #4

Claim 1 A solar collector panel for heating air comprising :

a container with a bottom panel, two vertically folded primary end panels, two vertically folded primary side panels and an open top,

a heat conducting absorber plate with a heat absorbing surface substantially the same width as the bottom panel and a length less than the bottom panel

a plurality of secondary inner end panels bondably attached to said primary end panels, each forming an air distribution plenum chamber facing inward,

a plurality of secondary inner side panels bondably attached to said side panels, each of said secondary side panels having an inwardly extending surface to longitudinally support said absorber plate.

a secondary two-part bottom panel longitudinally folded to form at least one vertical absorber plate support parallel to the centerline of the collector and bondably attached to the bottom panel,

a transparent cover

an aperture in each primary end panel for air inlet and outlet conduit connectors.

Claim 2 The collector of claim 1 wherein the container includes a non-conducting composite structure comprising an intermediate corrugated portion interspersed between non-corrugated outer pieces.

Claim 3 The collector of claim 1 overwrapped in waterproof film wherein air inlet and outlet conduit connectors are each inserted into one aperture of the primary end panel to puncture and penetrate end extensions of the film and force segments of the film inwardly in contact with the outside surface of the conduit

Claim 4 The collector of claim 1 wherein the primary end panels have

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tab extensions folded upward about the side folding line before being folded 90 degrees about the end fold line and adhesively attached to the side panels to form an open container.

Claim 5 The collector of claim 1 wherein said secondary end panels include plenums with vertical air distributor apertures.

Claim 6 The collector of claim 1 wherein said secondary inner side panels provide conductor plate supports that are aligned vertically with the upper surface of one or more supports extending upward from the bottom panel.

Claim 7 The collector of claim 1 wherein the absorber plate includes space between the absorber ends and respective end panels.

Claim 8 The collector of claim 1 including an air passage above and below the absorber plate.

Claim 9 In the collector of claim 1 wherein the absorber plate is supported by said inwardly extending surfaces of the secondary side panels and is positioned for air flow above and below said absorber plate from air inlet to air outlet of the collector.

Claim 10 The collector of claim 9 wherein the absorber plate is bondably held in position above said side supports.

Claim 11 The collector of claim 1 wherein the inner secondary end and side panels are contiguous extensions of the primary end and side panels and are folded inside the container.

Claim 12 In the collector of claim 11 wherein the plurality of secondary inner end panels extended from each end include a plurality of apertures and are folded inside each end to form the air distributing plenum for incoming and exiting air.

Claim 13 In a collector of claim 12 wherein said inside wall of said

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plenum includes an even number of apertures located symmetrically about the horizontal centerline of the collector.

Claim 14 In the collector of claim 11 wherein a folded portion of at least one tertiary panel extension of a secondary side panel is bonded to the primary bottom panel and includes a folded support under the absorber plate.

Claim 15 In the collector of claim 1 wherein the container is closed with a top cover having end and side extensions

Claim 16 In the collector of claim 1 wherein the collector is overwrapped in transparent film.

Claim 17 In the collector of claim 1 wherein said inwardly extending surfaces are portions of inwardly folded projections of the secondary inner side panels

Claim 18 In the collector of claim 11 wherein the secondary panels extended from each end include a plurality of apertures and are folded inside of each end to form an air distributing plenum for incoming and exiting air.

Claim 19 In a collector of claim 15 wherein said secondary inner end panels forming the air distribution plenum chambers include an even number of apertures located symmetrically about the centerline of the collector.

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